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EXAMINER

WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
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2626

DATE MAILED: 10/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/823,052	<b>Applicant(s)</b> AGICHTEN ET AL.	
	<b>Examiner</b> James S. Wozniak	<b>Art Unit</b> 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 61-87 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 61-87 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

1. In response to the office action from 2/16/2006, the applicant has submitted an amendment, filed 7/17/2006, arguing to traverse the art rejection based on the limitations regarding automatic candidate query transformation and evaluation (*Amendment, Pages 11-14*). Applicant's arguments have been fully considered, however the previous rejection is maintained due to the reasons listed below in the response to arguments.

2. Based on the amendments to claims 63, 72, and 80, the examiner has withdrawn the previous objections directed towards a lack of proper antecedent basis.

### *Response to Arguments*

3. Applicant's arguments have been fully considered but they are not persuasive for the following reasons:

With respect to **Claim 79**, the applicant first argues that Brown et al (*U.S. Patent: 6,665,666*) fails to teach automatically deriving a candidate query transformation from a user input query, arguing that the transformation taught by Brown is specified by a search engine designer (*Amendment, Pages 11-12*). In response, the examiner notes that Brown discloses an information retrieval system in which a user's input query is replaced by a QA (question-answer)

Art Unit: 2626

tag (*Col. 8, Lines 55-67; and Col. 10, Lines 1-12*). The QA tag that replaces a user's input query is representative of a question answer pair such as those shown in Fig. 3. While not specifically disclosed by Brown, as argued by the applicant (*Amendment, Page 12*), these question-answer pairs *could* be generated by a search engine designer, but are relied upon in the prior art rejection because they represent a collection of known question-answer pairs (*see Fig. 3 and Col. 9, Lines 20-35*) that is used to transform a user's input query, regardless of whether this collection is generated by a designer, corpus, or other method known in the art. At run time, however, the user's query is automatically transformed *by the system* disclosed by Brown using a matching algorithm without any involvement of a search engine designer (*Col. 10, Line 26- Col. 12, Line 10*). As such, the query replacement process taught by Brown is automatic. Also, because this process utilizes QA tags, referring to question-answer pairs, which are established prior to a run time operation (*input of a user's query*), Brown discloses using a collection of known answers associated with question phrases for automatic query transformation. Thus, the examiner notes that Brown teaches the aforementioned limitations.

The applicant further argues that Brown fails to teach evaluation of the performance of a candidate query transformation in an information retrieval system, whose results are compared to the answers that were the basis for the creation of that candidate query transformation (*Amendment, Pages 12-13*). In response, the examiner notes that Brown further teaches generating a plurality of query transformations for a user input query (*Col. 12, Lines 12-50*). These transformed queries (*i.e., QA tokens that refer to question-answer pairs*) are then submitted to an information retrieval system for evaluation (*Col. 15, Line 64- Col. 16, Line 4*). In Brown, the query transformations are effectively evaluated based on a document retrieval

Art Unit: 2626

score (*Col. 16, Lines 5-60*). Specifically, the more hits in a retrieved document would indicate that a query transformation was more successful due to the greater amount of correspondence between search terms and the retrieved document. Thus, the document score taught by Brown effectively evaluates query transformation performance. Also, the examiner notes that this evaluation process is accomplished according to a matching (comparison) process between a QA token that refers to an answer portion and documents in an information retrieval system. Although the examiner acknowledges that the presently claimed invention may utilize a different candidate query evaluation algorithm than the one taught by Brown, it is noted that the current claim scope, with respect to this feature, does not define the presently claimed invention over the teachings of Brown.

In regards to the applicant's arguments directed towards **Claim 61** (*Amendment, Pages 13-14*), see the response to arguments with respect to claim 79.

The dependent claims are argued as further limiting rejected independent claims (*Amendment, Pages 14-15*), and thus, also remain rejected.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 2626

5. **Claims 79-82** are rejected under 35 U.S.C. 102(e) as being anticipated by Brown et al (*U.S. Patent: 6,665,666*).

With respect to **Claim 79**, Brown discloses:

Receiving a query (*Col. 8, Lines 55-59*);

Classifying questions, based on a question phrase of the question into a plurality of question types (*Col. 4, Lines 63-65; Col. 5, Lines 11-26*);

Generating candidate query transformations for each question type to substitute for the question phrase as a search term, from a collection of question phrase-answer pairs, wherein the candidate query transformation for a question type is automatically derived from the answers associated with the question phrases in the question phrase -answer pairs which match the question type (*QA token generation, Col. 9, Line 10- Col. 12, Line 38*);

Evaluating performance of the generated candidate query transformations by executing the information retrieval system using queries formulated by applying the candidate query transformations and comparing results from the information retrieval system to the answers in the question phrase-answer pairs (*search result scoring, Col. 15, Line 64- Col. 16, Line 60*).

With respect to **Claim 80**, Brown discloses replacing a user input query with an answer term in a QA token corresponding to a particular question type (*Col. 9, Line 10- Col. 12, Line 38*).

With respect to **Claim 81**, Brown discloses that an answer portion of a QA token is represented by a phrase (text segment) (*Col. 9, Lines 10-64*).

With respect to **Claim 82**, Brown teaches generating a plurality of query transformations corresponding to synonyms of a user query (*Col. 12, Line 39- Col. 13, Line 3*), which are

Art Unit: 2626

submitted to a search engine for the retrieval of relevant documents (*Col. 15, Line 64- Col. 16, Line 60*).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 61-63, 75, 77-78, and 83** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al (*U.S. Patent: 6,665,666*) in view of Kupiec (*U.S. Patent: 5,696,962*).

With respect to **Claim 61**, Brown discloses:

Classifying questions, based on a question phrase of the question into a plurality of question types (*Col. 4, Lines 63-65; Col. 5, Lines 11-26*);

Generating candidate query transformations for each question type to substitute for the question phrase as a search term, from a collection of question phrase-answer pairs, wherein the candidate query transformation for a question type is automatically derived from the answers associated with the question phrases in the question phrase -answer pairs which match the question type (*QA token generation, Col. 9, Line 10- Col. 12, Line 38*);

Evaluating performance of the generated candidate query transformations by executing the information retrieval system using queries formulated by applying the candidate query

Art Unit: 2626

transformations and comparing results from the information retrieval system to the answers in the question phrase-answer pairs (*search result scoring*, Col. 15, Line 64- Col. 16, Line 60).

Although Brown does suggest effectively selecting QA tokens by presenting a set of top ranking documents that contain information corresponding to QA tokens (Col. 15, Line 64- Col. 16, Line 60), Brown does not explicitly disclose the concept of selecting QA pairs based on a scoring algorithm, however Kupiec discloses a means for selecting and presenting a number of top-ranking result pairs in question and answer format (Col. 23, Line 60- Col. 25, Line 65).

Brown and Kupiec are analogous art because they are from a similar field of endeavor in information retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Brown with the result pair ranking means taught by Kupiec in order to provide a means for answering a user's natural language question that automatically determines optimal queries (*Kupiec*, Col. 1, Lines 56-59; Col. 39, Lines 29-42).

With respect to **Claim 62**, Brown discloses candidate query transformations (QA tokens) that are dependent upon a document collection (Col. 9, Lines 10-65). Thus, if a different document collection were utilized, it would be inherent that the query transformations or QA tokens would also be different. Also, it would be inherent that different IR systems could produce different candidate query transformations (*QA tokens*), since QA tokens are dependent upon documents available in a particular information retrieval system.

With respect to **Claim 63**, Brown discloses replacing a user input query with an answer term in a QA token corresponding to a particular question type (Col. 9, Line 10- Col. 12, Line 38).



Art Unit: 2626

With respect to **Claim 75**, Kupiec further teaches query expansion and weighted ranking of result pairs (*Col. 22, Line 64- Col. 24, Line 44*).

With respect to **Claim 77**, Brown discloses question types used to classify questions stored in a QA token list (*Col. 9, Lines 10-64*).

With respect to **Claim 78**, Brown teaches a process for matching a user input to an appropriate question type (*Col. 12, Lines 24-38*), while Kupiec also teaches a method for determining a question type, wherein the n-gram frequency of a noun phrase located in the result pairs is computed (*Col. 13, Lines 1-25; Col. 5, Lines 15-24; Col. 23, Lines 36-60*).

With respect to **Claim 83**, Brown teaches the query processing system capable of generating multiple queries corresponding to a user input, as applied to Claim 82. Brown does not explicitly disclose the concept of ranking query candidates based on a weighting algorithm, however Kupiec discloses such a ranking means (*Col. 23, Line 60- Col. 25, Line 65*).

Brown and Kupiec are analogous art because they are from a similar field of endeavor in information retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Brown with the result pair ranking means taught by Kupiec in order to provide a means for answering a user's natural language question that automatically determines optimal queries (*Kupiec, Col. 1, Lines 56-59; Col. 39, Lines 29-42*).

8. **Claims 64-66 and 68-71** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al in view of Kupiec and further in view of Bradford (*U.S. Patent: 6,678,679*).

Art Unit: 2626

With respect to **Claim 64**, Brown in view of Kupiec teaches the query processing system as applied to Claim 61. Brown in view of Kupiec does not specifically teach a means for filtering query terms, however Bradford discloses such a means (*Col. 6, Line 46- Col. 7, Line 5*).

Brown, Kupiec, and Bradford are analogous art because they are from a similar field of endeavor in information retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Brown in view of Kupiec with the means for filtering a query prior to executing an information retrieval system as taught by Bradford to produce final results in order to improve the relevancy of search results (*Bradford, Col. 4, Lines 25-30*).

With respect to **Claim 65**, Brown teaches a means for candidate weighting (*Col. 13, Lines 5-43*).

With respect to **Claim 66**, Brown teaches phrase and single word candidate weighting (*Col. 13, Lines 5-43; and QA token list, Col. 9, Lines 20-35*).

With respect to **Claim 68**, Kupiec further discloses:

The filtering of the candidate query transformations chooses candidate query transformations with a highest selection weight, the selection weights computed for each candidate query transformation based on co-occurrence statistics and on the term weights (*Col. 34, Lines 1-9; Col. 31, Lines 1-10*).

**Claim 69** contains subject matter similar to Claim 65, and thus, is rejected for the same reasons.

With respect to **Claim 70**, Kupiec discloses:

Sorting the initial candidate transforms into buckets according to the number of words in the transform phrase (*grouping and ranking result pairs according to the number of title words, Col. 24, Lines 35-44, and the determination of the most relevant result pairs for a presentation list, Col. 25, Lines 20-33*).

With respect to **Claim 71**, Bradford teaches the method of search term filtering in which words that indicate the content of a query are discarded as applied to Claim 64.

9. **Claim 67** is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al in view of Kupiec, in view of Bradford, and further in view of Robertson et al (*"Relevance weighting of Search Terms," 1976*).

With respect to **Claim 67**, Brown in view of Kupiec and further in view of Bradford teaches the natural language document retrieval system utilizing term weighting, as applied to Claim 65. Brown in view of Kupiec and further in view of Bradford does not specifically suggest the use of an equation similar to that in Claim 67 to calculate term weighting, however Robertson et al teaches such an equation (*weighting function, Page 130, and further derivation using the document relevance table on Page 135*).

Brown, Kupiec, Bradford, and Robertson are analogous art because they are from a similar field of endeavor in document retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modifying the teachings of Ku Brown in view of Kupiec and further in view of Bradford with the equation for calculating term weighting as taught by Robertson in order to provide a specific means of improving document retrieval accuracy and, in turn, retrieval performance (*Robertson, Page 129, Col. 2 –130, Col. 1*).

Art Unit: 2626

10. **Claims 72-74 and 84-86** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al in view of Kupiec, and further in view of Brewster et al (*U.S. Patent: 6,070,133*).

With respect to **Claims 72 and 84**, Brown in view of Kupiec teaches the query processing system as applied to Claims 61 and 83. Brown in view of Kupiec does not specifically teach a ranking process that involves generating sub-documents, however Brewster discloses such a process (*Col. 3, Lines 13-49*).

Brown, Kupiec, and Brewster are analogous art because they are from a similar field of endeavor in information retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Brown in view of Kupiec with the subdocument generation means taught by Brewster, in order to provide visual document summaries without having to read an entire document (*Brewster, Col. 3, Lines 43-49*).

With respect to **Claims 73 and 85**, Brewster further teaches a process of overlapping window partitioning (*Col. 6, Lines 17-43*).

With respect to **Claims 74 and 86**, Kupiec teaches the means for ranking queries according a number of hits within a document, as applied to Claim 61, while Brewster teaches the method of generating a subdocument as applied to Claim 84.

11. **Claim 76** is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al in view of Kupiec and further in view of Pedersen et al (*U.S. Patent: 5,442,778*).

With respect to **Claim 76**, Brown in view of Kupiec teaches the natural language document retrieval system utilizing term weighting, as applied to Claim 75. Brown in view of

Art Unit: 2626

Kupiec does not teach averaging the similarity of documents, however Pedersen teaches such an average similarity (*Col. 5, Lines 24-41*).

Kupiec and Pedersen are analogous art because they are from a similar field of endeavor in information retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Kupiec with the use of average document similarity in order to enhance searching techniques (*Pedersen, Col. 5, Lines 24-27*).

12. **Claim 87** is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al in view of Kupiec, in view of Brewster et al, and further in view of Pedersen et al.

With respect to **Claim 87**, Brown in view of Kupiec and further in view of Brewster teaches the natural language document retrieval system utilizing term weighting, as applied to Claim 86. Brown in view of Kupiec and further in view of Brewster does not teach averaging the similarity of documents, however Pedersen teaches such an average similarity (*Col. 5, Lines 24-41*).

Brown, Kupiec, Brewster, and Pedersen are analogous art because they are from a similar field of endeavor in information retrieval systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Brown in view of Kupiec and further in view of Brewster with the use of average document similarity in order to enhance searching techniques (*Pedersen, Col. 5, Lines 24-27*).

*Conclusion*

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached at (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2626

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak  
10/4/2006



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